
FRINGE BENEFITS AND THE VARIABLE COMPENSATION PLAN OF THE MISSISSIPPI STATE PERSONNEL BOARD

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EXECUTIVE SUMMARY

This study is a pilot study that compares total compensation, including fringe benefits, between employees covered by the State Personnel Board of Mississippi and a sample of private sector firms for a limited number of occupations. The results from the study can be used, together with characteristics of private sector employees in similar occupations, to predict public sector wages and benefits for those employees. These estimations can then be used in evaluation of comparisons of both wages and benefits across sectors.

The sample covers 43 private sector firms with nine specific Employment Security Code occupational categories representing 258 Mississippi employees. The comparable occupations covered by the State Personnel Board (SPB) included 1,812 full-time employees who were employed all twelve months of fiscal year 2000 in 212 State Personnel Board occupational categories.

Regression analysis was conducted on the State Personnel Board group of employees with job descriptions equivalent to those in the private sector sample. Both wages and total compensation (including fringe benefits) were estimated as a function of personal characteristics and occupational groups. Coefficients from those equations were then used to estimate wages which would have occurred for the private sector employees if they were to have been covered by the same wage and compensation structure as that for employees covered by the State Personnel Board.

For those occupations covered by the study, the results suggest that lower wage employees tend to have both better wages and better total compensation in the public sector than in the private sector. The reverse is true for high-wage employees. The specific results indicated that those employees in the occupational groups examined with private sector salaries of less than \$18,000 per year would have made both higher wages and higher total compensation under the State Personnel Board structure than under private sector compensation. Those private sector employees making more than

\$30,000 per year in the private sector would have earned both lower salaries and lower levels of total compensation under the State Personnel Board structure than they made in the private sector. The observations between \$18,000 and \$33,000 are mixed, but most would be better off under their existing private sector wage structure than under the SPB wage structure. The same is true for total compensation. **The primary reason for the differences tended to be in the wage structure rather than fringe benefits.**

Fringe benefits as a percentage of total compensation varied widely for the private sector sample from lows of less than 10 percent to highs of over 50 percent. The weighted average fringe benefits as a percentage of total compensation for the entire sample was 27.23 percent, which compares to the U.S. Department of Labor, Bureau of Labor Statistics (BLS) survey percentages of 26.5 percent in the South and 27 percent at the national level. However, the total weighted average for the sample was 27.23 percent. The range for the majority of occupations in the sample was 17.12 percent to 23.34 percent.

For the equivalent group of full-time State Personnel Board-covered employees, the fringe benefits were an average of 21.45 percent of total compensation with percentage varying only slightly by occupational group. Thus, fringe benefits paid to employees covered by the State Personnel Board were generally equivalent to those paid in most of the occupations sampled.

For the private sector sample, those employees with higher levels of skills generally were offered a wider array of fringe benefits. In some cases, however, very low wage employees with only health benefits and sick leave actually were shown to have very high percentages of total compensation in fringe benefits. This is due to the fact that the cost of health benefits is so large relative to the wages of a minimum wage employee. Such situations make comparisons of fringe benefits very difficult to use as the basis for drawing conclusions.

Several important lessons were garnered from the study. These lessons take the form of three specific recommendations.

1. The State Personnel Board should continue to periodically analyze the differences between total compensation in the private and public sectors, but as a routine basis for comparison, wage and salary would appear to be satisfactory. Regression estimates from the State Personnel Board data on public employees are highly reliable and can be used to periodically estimate wage structure in a fashion that can be used to forecast public sector wages for comparable private sector employees where data are available. These estimates can then be used for wage comparison.

2. Surveys of private sector employers should be limited to those surveys done directly by governmental entities. Employers are reluctant to release what they believe to be highly confidential information to non-governmental entities. It is recommended that the State Personnel Board survey firms directly using field representatives who actually visit and collect data at the firm, or the Board should request that surveys by Mississippi Employment Security Commission include demographic (age, gender, race, job tenure) and education variables. Alternatively, existing data gathered by the State Personnel Board should be supplemented by salary and fringe benefit data from the new National Compensation Survey presently being conducted by the U. S. Bureau of Labor Statistics.
3. The State Personnel Board should rely heavily upon their internal statistics with respect to unfilled vacancies and applications for positions that have been filled.

INTRODUCTION

Background

In 1996 Campbell, et al. examined the extent to which wages under the Variable Compensation Plan of the Mississippi State Personnel Board differed from those paid by private firms for labor in similar jobs. After adjusting for differences in individual worker characteristics, the findings indicated that aggregate state wages for employees covered by the State Personnel Board were close to those in the private sector with the exception of the highest and the lowest wage occupations. It was hypothesized that fringe benefit differences between the public and private sectors might eliminate much of these differences at the lowest earnings levels. The researchers also learned that the results depended upon the level of aggregation, with substantial differences seen in some individual occupational categories.

The incidence and scope of fringe benefits have been found to vary according to geographic region, industry, union status, salary level, and full-time/part-time status (BLS, EBS Bulletin #2456, 11/94). Currently, the most comprehensive data available on total compensation are located in the Employment Cost Index (ECI) compiled by the Bureau of Labor Statistics (BLS). ECI micro-data have been used by BLS personnel to examine inequality in compensation rates. However, these micro-data are not presently available as public-use data. The ECI is currently being replaced by a new BLS series (The National Compensation Survey) that will eventually include fringe benefits information. This survey will be available for public use, but will not contain demographic, educational, and experiential characteristics of employees. This effort is in its first stage of implementation and currently contains only wage and earnings data. It also only includes one county (Winston) from Mississippi. In both national data sets, these micro-data are valuable for investigating overall differences in fringe benefits between large geographic regions (as the South versus the West), but the nature of the sampling plan reveals little about specific industrial, salary, position, or other differences in compensation and fringe benefits in any specific state. For these reasons, this project was intended as a pilot study that could help start a possible sampling program to investigate compensation (including salary or wages and fringe benefits) for Mississippi.

General Overview of the Study

The Sampling Plan

Fifteen general Employment Security Code (ESC) job descriptions were chosen for this investigation. For each of these job descriptions, a random sample of medium and large firms located in Mississippi were mailed surveys. The sample was selected using a two-stage, stratified design

with proportional probabilities. In the first stage, the sample was based upon probabilities of a given occupation being in a given industry. In the second stage, the probabilities of employment in each industry in Mississippi were weighted. Job classifications were chosen based upon private-to-public sector translations conducted in earlier work for the State Personnel Board by the John C. Stennis Institute of Government. Each surveyed firm was asked to provide full information regarding fringe benefits actually paid to those in the job description, as well as typical or average characteristics of the individuals in that job classification. Specific fringe benefit payments requested were both voluntary and legally required benefits, including workers' compensation, retirement, life insurance, health insurance, unemployment insurance, personal leave, medical leave, vacation, and holidays. This information was to be stated as an annual cost per employee in the job category in addition to base pay as an annual figure, including any overtime paid.

Models Used in the Analysis

The information collected was analyzed, and compensation characteristics were examined. A compensation model was built to examine differences in compensation due to job classification and human capital characteristics. A second similar model examined base-pay levels. The base-pay model and the compensation model were each estimated using all SPB job codes corresponding to the survey data collected. These results were used to predict private sector wages and total compensation. Next, the differences between the predicted amounts and the actual private sector data were then analyzed and the results reported.

Survey Limitations

This survey was limited in its focus from the conception of the project. The intent was to gather information on a very focused group of jobs and to develop the appropriate model from which initial projections could be made. The sampling plan and model were to be used as prototypes for future study in the remaining occupational categories. It was hoped that experience with this limited group would lead to lessons which could be used in examining all categories of employment. The conclusions from this study are also limited in direct applicability due to the very limited response achieved by the survey. However, the lessons learned, together with the basic models that have been built, can serve as a basis for continued annual efforts by the State Personnel Board in analysis compensation. It is suggested that the State Personnel Board begin by doing the survey work itself using personal visits by field representatives from the board at a number of firms each year and collecting data on all employees at each firm, including demographic, human capital, base wage, hours worked, and cost of fringe benefits provided. A second possibility would be for the State Personnel Board to become a joint sponsor of the surveys conducted by the Mississippi Employment Security Commission by adding a few questions to those surveys. Since the data being requested are considered proprietary and highly confidential by most firms, and due to the difficulty many firms have

been producing the data, it is doubtful whether further private mail surveys by university personnel will be able to gather sufficient data of the scope and detail necessary for the models to yield accurate predictions which can then be used as a basis for policy.

A third possible direction for further efforts in the future would be for the SPB to use the new National Compensation Survey as a supplement to its current wage and salary survey and do the analysis when the compensation data become available.

The Study Question

The primary question addressed by this study is the extent to which total compensation, as opposed to wages, differs between state government and the Mississippi private sector for a small sample of occupational categories. This is to be considered a pilot study. Data gathered by survey are examined and both characteristics of the employees and fringe benefits are described and compared to characteristics of employees and fringe benefits covered by the Mississippi State Personnel Board. A model, which can be used as a basis for total compensation comparison, is then designed and demonstrated using the data collected for this study. The study also describes how the results of the model should be interpreted in order to determine the comparability of total compensation between the private and public sectors. Finally, important lessons learned in this pilot study are described.

The primary contributions made by this effort are the:

- 1) incorporation of total compensation, rather than only wages, in the examination of private/public differentials; and
- 2) use of a model incorporating both human capital characteristics and the specific occupations for which compensation differentials are examined.

As already demonstrated in Campbell, et al. (1996) for the State of Mississippi, the comparison of overall average wages between public and private sector employees is highly misleading. The more aggregate the level of examination, the more misleading the results of such comparisons can be. The failure of such comparisons is the result of the failure to account for specific worker and occupational characteristics at a micro-level. In the same study, the authors stated "in general, earnings for the SPB employees in the aggregate are close (within 7 percent) to what they would earn on average working for competing employers." The study did uncover some significant specific differences between SPB and private sector earnings. In general, both highest wage jobs and lowest wage jobs were paid lower wages than similar skilled workers in similar jobs in the private sector. In the previous study, it was suggested that the differential might be less at the lowest wage levels if fringe benefits were also considered. This study attempts to address that question.

At the national level, large firms pay for fringe benefits that constitute nearly 30 percent of total compensation for their workers (Watters, 2000). These fringe benefits include some legally required benefits, such as workers'

compensation; in-kind benefits, such as life insurance or health insurance; and deferred compensation, such as retirement benefits. There are a number of factors contributing to the incentive for firms to offer compensation in the form of fringe benefits. In some cases, tax incentives provide this encouragement. In other cases, the benefits can be provided more cheaply due to economies of scale if provided by the firm. Thus, employees may use the provision of such benefits as a decision factor in choosing where to work. In a tight labor market, this factor is likely to provide even greater incentives for the employer who is bidding for workers in a competitive market. The literature review that follows examines the incentives for paying fringe benefits and the effects of fringe benefits on employment decisions.

SECTION I: REVIEW OF THE LITERATURE

Context

In September 2000, approximately 232,000 workers in Mississippi were employed in some level of government. This represents more than 20 percent of the total employment for the state. More than 64,000 of these workers were employed by state government, and of that total about half (32,250) were employed in agencies and departments that fell under the jurisdiction of the SPB (State Personnel Board of Mississippi, 2000).

The SPB manages the hiring and compensation of those workers falling under SPB jurisdiction. It is necessary for the SPB to determine levels of compensation that will draw high-quality workers in sufficient numbers to accomplish the missions of the agencies under their jurisdiction. However, at the same time the levels of compensation must not be so high as to exceed the public funds available and are expected to be "fair" both to the State and to the employees.

Since 1982, the means used to accomplish these objectives have been spelled out in the Variable Compensation Plan (VCP). The VCP is the system in which the appropriate wage and salary are set for each covered classification of SPB-covered government employees. The VCP is a flexible mechanism that allows the SPB to adjust salaries with flexibility and establish fairness within the system.

In order to assure this "fairness," the SPB conducts annual surveys to determine the prevailing wage in surrounding state governments and private sector employers in the area. Using those surveys as input into the com-

pensation process, the SPB attempts to adjust compensation. Other considerations in this process include how specific pay ranges in Mississippi governmental jobs compare to similar positions in surrounding state governments, merit and job performance, the length of time the workers have spent in government service, and periodic adjustments allowed by the legislature for cost-of-living changes.

In addition, the compensation process allows adjustments for workers who have obtained specific training or certification to enable their jobs to be reclassified, change classifications where positions have been misclassified, compensate for additional job-related educational achievements, pay for overtime or call-backs, and hire at a higher-than-normal starting range when education or experience warrants. In addition the SPB may allow higher starting salaries when there are particular recruiting difficulties or where the new hire is being recruited from within. Finally, the SPB may grant additional fringe benefits or other non-wage compensation if warranted.

The economic theory relevant to the primary issue of ensuring fair and equitable compensation to SPB-covered employees has been discussed in Campbell, et al. (1996). A brief review of labor market theory is presented below in order to more easily comprehend the remainder of the literature review.

Labor Markets

Traditional economic theory is primarily based upon incentives. The supply of labor is the quantity of labor willing to work at each possible wage. The supply of labor is based upon the decision made by laborers about whether and how much to work. According to the theory, workers gain utility (or satisfaction) from leisure. They may also gain utility consumption made possible by money earned while working. Disutility (or dissatisfaction) is the result of laboring. Workers gain utility when they earn cash by working, but they also lose utility since they lose leisure time. In addition, some jobs are inherently difficult, distasteful, dangerous, or otherwise contribute to an even larger loss of utility. In some cases, work may actually cost the worker by requiring certain expenditures such as day-care, transportation costs, expenditures on uniforms or equipment, or other explicit costs. When the utility brought about by money earned exceeds the loss of utility from working, then the potential worker will choose to apply for work. The higher the wage rate, the more labor will be supplied.

The demand for labor is the amount of labor employers are willing and able to hire at any given wage rate. The demand for specific workers is dependent upon the additional output produced by all of the workers and the contribution to revenue of that additional output to the revenue of the firms. This is called the marginal revenue product (MRP) of labor. The output brought forth per unit of labor is the productivity of labor. Productivity is dependent upon the tools and technology used by the firm and the characteristics of the worker. The revenue brought about by additional output is dependent upon the market value of the good or service provided by the employer. Productivity is bound by the “law of diminishing marginal returns,” which states that the MRP of labor eventually declines as additional labor is hired.

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A major characteristic of workers that affects productivity is known as human capital. Human capital includes natural endowments and the collection of abilities and knowledge that humans acquire through education and experience. Workers can increase their human capital through additional education or training. This investment in human capital allows the workers to become more productive. This improvement in productivity allows the workers to earn higher wages.

The demand for labor and the supply of labor together determine the equilibrium wage-rate for a given labor market. The interplay between the marginal revenue product that comes about from hiring an additional worker, as well as the additional cost of the worker, determine the quantity of labor that will be hired by the firm given a specific equilibrium wage-rate. The demand for labor and the supply of labor together determine the equilibrium wage-rate and quantity of labor employed in the market from which firms draw their workers. The market guarantees that highly productive workers, as measured by the MRP, will command higher wages than lesser productive workers with low MRP.

If the actual wage rate exceeds the equilibrium wage rate, then the quantity of labor that will be offered by workers will be greater than the quantity of labor demanded by employers. This situation is called excess supply. If such a situation exists, then those workers who are unemployed but would still be willing to work at lower wages will offer to do so. The lower wage-rate will cause employers to hire additional workers; this will, in turn, cause the wage rate to decline.

If the actual wage rate is below the equilibrium wage rate, then the quantity of labor being supplied to the market is less than the quantity being demanded. This means there is a shortage of labor. Employers demand more labor hours than are being offered by workers because the wage rate is too low. The wage rate is lower than some employers are willing to pay. These employers begin to bid for workers by offering higher wages. Other workers who are unwilling to work at the lower wage will now offer their labor services. This will continue until the wage rate rises to the equilibrium wage-rate (the wage rate where the quantity of labor supplied is equal to the quantity of labor demanded).

Through these mechanisms, the market always moves the wage rate toward equilibrium. There are many factors that can change the equilibrium wage rate; for this reason, wages are often in movement toward changing equilibriums, such that sometimes there does not appear to be a pattern to these movements. This means that a smoothly operating market system may not always be the case. There are situations where an “imperfect” market can occur. Such imperfections may arise due to the market power on the part of either the employer or the employees. Imperfect markets may also arise from a lack of good infor-

mation to either the employers or employees or from a host of economic, social, and political factors.

Specific occupations, skills, or workers may be part of more than one labor pool. In such situations, an increase in the demand for workers in one market may cause a decrease in supply for another market. For example, a person who has both secretarial skills and computer skills may work as a legal secretary in the market for legal clerical help, but may also have the skills to shift to information processing in manufacturing enterprises if wage rates in the second market increase. If many such people are able to make the same move, this will increase the supply of labor in the manufacturing pool for information processing labor and decrease the supply of legal clerical workers. The result should be decreased pressure on information processing wages in the manufacturing sector and increased pressure on legal clerical workers. These changes and the speed of their adjustment depend on how well wage information is known to workers and firms in the two labor markets, the extent to which the necessary human capital for one market exists in the other market, institutional constraints (such as licensing or certifications), and social factors such as racism or sexism.

Fringe Benefits

Fringe benefits constitute approximately 27 percent of total compensation in the United States. (Watters, 2000). Fringe benefits are non-wage forms of compensation that can occur as deferred compensation or payments-in-kind. Payments-in-kind represent current compensation in the form of a good or service provided to the employee. This could include such things as the use of an automobile, vacation trips, childcare services, life insurance, and health insurance. Deferred compensation is compensation accumulated by the employee but not received until some later date. Pensions or retirement benefits are the primary forms of deferred compensation.

Employee Compensation Statistics

The U.S. Department of Labor's Bureau of Labor Statistics has conducted surveys of private employee compensation throughout the nation (Watters, 2000). According to the most recent of these surveys, hourly compensation in the South was the lowest of the four census regions (Figure 1). The Southern Census Region includes Alabama, Arkansas, Delaware, the District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

Compensation in the South (Table 1) included an average of \$4.72 per hour in benefit costs. Among those costs, legally required benefits constituted \$1.53 per hour on average, paid leave was \$1.08; insurance, \$1.06; supplemental pay, \$.53; and retirement and savings averaged \$.51; and other benefits, \$.02. This compares to national averages of \$1.67 for legally required benefits; \$1.28 for paid leave, \$1.19 for insurance, \$.60 for supplemental pay, \$.59 for retirement and savings, and \$.03 for

U.S. Employee Compensation by Census Region, March 2000

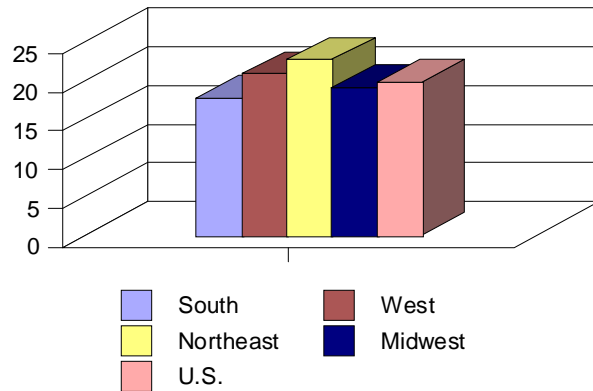


Figure 1: U.S. Employee Compensation by Census Region, March 2000

other benefits (Watters, 2000 and Figure 2). As a proportion of total compensation, benefits comprised 26.5 percent in the South compared to 27.8 percent in the Northeast, 27.7 percent in the Midwest, 26.0 percent in the West, and 27.0 for the United States.

Health insurance contributes only about 5.0 to 5.8 percent to the overall compensation in all regions of the country. Yet, this represents over twenty percent of the overall costs of benefits and has been a major factor in determining the rate of growth of benefit costs over the last twenty years (Monthly Labor Review, 1998). Benefit cost increases slowed in the mid 1980's with the result that benefits grew at approximately the same rate as wages. This was largely due to a slowdown in the growth of health insurance costs. However, from 1988 through 1994, health insurance rates increased substantially faster than wages. This, plus a Social Security tax increase, caused benefit

Private Industry Employer Costs Per Hour Worked, March 2000

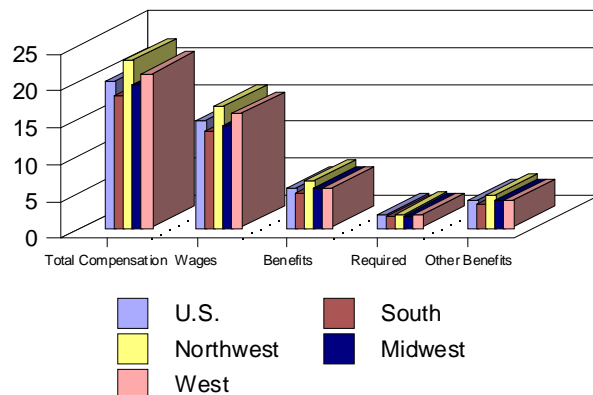


Figure 2: Private Industry Employer Costs Per Hour Worked, March 2000

FRINGE BENEFITS AND THE VARIABLE COMPENSATION PLAN OF THE MISSISSIPPI STATE PERSONNEL BOARD

Table 1: Private Industry U.S. and By Region: Employer costs per hour worked for employee compensation and costs as a percent of total compensation, March 2000*

	U.S.		South		Northeast		Midwest		West	
	Cost	%	Cost	%	Cost	%	Cost	%	Cost	%
Total Compensation	\$19.85	100.0	\$17.81	100.0	\$22.67	100.0	\$19.22	100.0	\$20.88	100.0
Wages and Salaries	14.49	73.0	13.09	73.5	16.37	72.2	13.91	72.4	15.45	74.0
Total Benefits	5.36	27.0	4.72	26.5	6.3	27.8	5.32	27.7	5.43	26.0
Paid Leave	1.28	6.4	1.08	6.1	1.64	7.2	1.19	6.2	1.33	6.4
Vacation	0.63	3.2	0.54	3.0	0.81	3.6	0.59	3.1	0.64	3.1
Holiday	0.44	2.2	0.37	2.1	0.55	2.4	0.41	2.1	0.47	2.3
Sick	0.15	0.8	0.13	0.7	0.20	0.9	0.12	0.6	0.17	0.8
Other	0.06	0.3	0.05	0.3	0.3	0.3	0.06	0.3	0.05	0.2
Supplemental Pay	0.60	3.0	0.53	3.0	0.71	3.1	0.64	3.3	0.54	2.6
Premium	0.24	1.2	0.22	1.2	0.19	0.8	0.31	1.6	0.21	1.0
Shift differentials	0.05	0.3	0.04	0.2	0.05	0.2	0.07	0.4	0.04	0.2
Nonproduction bonuses	0.31	1.6	0.27	1.5	0.46	2.0	0.27	1.4	0.29	1.4
Insurance	1.19	6.0	1.06	6.0	1.40	6.2	1.23	6.4	1.14	5.5
Life	0.04	0.2	0.04	0.2	0.05	0.2	0.05	0.3	0.04	0.2
Health	1.09	5.5	0.96	5.4	1.27	5.6	1.12	5.8	1.05	5.0
Short-term disability	0.04	0.2	0.03	0.2	0.05	0.2	0.04	0.2	0.02	0.1
Long-term disability	0.03	0.2	0.03	0.2	0.03	0.1	0.02	0.1	0.03	0.1
Retirement and Saving	0.59	3.0	0.51	2.9	0.67	3.0	0.61	3.2	0.61	2.9
Legally required benefits	1.67	8.4	1.53	8.6	1.85	8.2	1.60	8.3	1.79	8.6
Other Benefits	0.03	0.2	0.02	0.1	0.03	0.1	0.04	0.2	0.02	0.1

Source: Watters, 2000; Note: Rounding may lead to slight error in summing total benefits.

costs to escalate at a faster rate than wages in each year. In the mid 1990's, there was another slowdown in health insurance costs that helped to slow the rate of growth for benefits to less than that for wages and salaries (Monthly Labor Review, 1988).

Wages and salaries vary by industry; however, there is also variability in non-wage compensation by industry. For

example, workers in manufacturing receive nearly one-third of their compensation in the form of benefits, whereas workers in other industries only get about one-quarter of their compensation in the form of benefits (Monthly Labor Review, 1999).

BLS reports that in March 2000 employer costs in state and local governments averaged \$29.05 per hour for the

Table 2: Employer Costs for Employee Compensation, March 2000

Industry or Occupation Category	Total Compensation	Wages and Salaries	Total Benefit Costs	Paid Leave	Supplemental Pay	Insurance	Retirement and Savings	Legally Required Benefits	Other Benefits
Civilian Workers	\$ 21.16	\$ 15.36	\$ 5.80	\$ 1.42	\$ 0.55	\$ 1.36	\$ 0.77	\$ 1.67	\$ 0.03
State and local government workers	29.05	20.57	8.48	2.26	0.25	2.38	1.84	1.70	0.05
Private industry workers	19.85	14.49	5.36	1.28	0.60	1.19	0.59	1.67	0.03
Goods-producing industries	23.55	16.25	7.30	1.51	1.02	1.77	0.83	2.09	0.07
Service-producing industries	18.72	13.95	4.77	1.20	0.47	1.02	0.51	1.54	< 0.01
Manufacturing	23.41	16.01	7.40	1.74	1.04	1.85	0.75	1.92	0.09
Non-manufacturing	19.12	14.18	4.94	1.18	0.51	1.06	0.56	1.62	< 0.01
White-collar workers	24.19	17.91	6.28	1.76	0.67	1.34	0.70	1.78	0.03
Blue-collar workers	18.73	12.99	5.73	1.01	0.76	1.39	0.69	1.85	0.04
Service workers	9.72	7.57	2.16	0.39	0.14	0.45	0.13	1.05	< 0.01

Source: Bureau of Labor Statistics, "Employer Costs for Employee Compensation, March 2000," Appendix

nation (Table 2). This can be broken down into \$20.57 (or 70.8 percent) in wages and \$8.48 (or 29.2 percent) in benefits. At the same time, employer costs in private industry averaged \$19.85 per hour including \$14.49 in wages and salaries and \$5.36 in total benefits. These values differ widely depending upon the kind of industry and type of occupation (Table 2).

Watrowski (1999) examined compensation for the last four decades of the twentieth century and learned that the role of benefits in overall compensation of employees has changed dramatically over time. Cash payments in 1959 constituted 91 percent of all compensation costs for production workers in manufacturing. By 1998, the portion of total compensation paid as cash had decreased to 78 percent. The rest of the compensation was fringe benefits. Part of the reason for this change came from legal requirements including Social Security and Medicare. Indeed, legally required benefits constituted the largest category of benefits in 1998. Other typical non-wage benefits included time-off, health and life insurances, and retirement programs. The largest increases in terms of percent of compensation occurred in health and disability benefits. This category is composed of both legally required and voluntary health care and disability benefits, including health, life, and disability insurances; Medicare; and workers' compensation. In 1959, the major fringe benefit was for paid leave.

Compensation beyond cash pay continued to grow both in size and scope with some companies offering benefits ranging from paternity benefits to on-site dental services. There are many factors influencing the growth of benefits.

In addition to legal requirements, the demographics of the workforce has changed substantially with more women working outside the home and employees retiring at younger ages. In addition, the costs of some benefits have grown. For example, technological advances and increased demands for health insurance have driven the costs of those benefits up with rapid increases during some periods and decreases in others as conditions have varied (Watrowski, 1999).

Moore and Raisian updated studies originally conducted in the mid 1970's. Much of the earlier work by Smith (1976a, 1976b, and 1977b) and by Kiefer and Smith (1977) are summarized in Smith (1977a). Those studies attempted to measure government versus private wage differentials. These authors learned that government employees as a group earned a small wage premium of about two to three percent during the 1970's and 1980's.

The study by Moore and Raisian (1991) is especially relevant here. The authors offered five major hypotheses to explain public/private wage differentials in the United States, after adjusting for differences in human capital, personal characteristics, and location factors (Moore and Raisian [1991, 14-16]).

- 1) The theory of compensating wage differentials explains the importance of non-wage benefits and conditions of employment in interpreting wage differentials.
- 2) Wage premiums attributable to skill differentials should, in the long run, reduce the training costs and income foregone in acquiring the skill.

- 3) Wage premiums and short-run market disequilibrium are primarily due to inelasticity of supply.
- 4) Unionism is more likely to increase government wages than private sector wages.
- 5) Due to greater racial and gender discrimination in the private sector than in the public sector, there should be upward wage pressure in the public sector in any jobs where there is a large minority presence in the private sector; however, this should also reduce the overall gross public-to-private differential.

The current effort is based upon a cross-sectional sample from one time-period. This ignores possible cyclical influences, so hypotheses two and three are of no particular relevance. Since there is no governmental public employee bargaining agent in Mississippi, hypothesis 4 is also of no concern. However, hypotheses 1 and 5 are of particular importance to the current study.

With respect to the compensating wage hypothesis, Moore and Raisian did not find job security to be a significant variable. They did find size of firm to be an important variable with the implication that the larger size of government agencies would tend to bias wages in an upward direction. Their data did not include fringe benefits; thus, they were not able to assess the influence of benefits in determining wages.

Moore and Raisian did find a small positive wage differential or premium for government workers relative to private sector workers, thus confirming the overall results of Smith (1977a). The decomposition of their results indicated that the extent of the premium differed according to employee characteristics and level of government. Federal employees earned the highest wage premium among government workers. The greatest difference in wages between government and private sector jobs was due to human capital differences and to unusually high relative wages paid to women. The differentials were a result of high wages paid to females that was peculiar to state government. These were not evident for either local or federal government. Their results also indicated that racial discrimination was far less evident in the federal government jobs than in either the state, local, or private sectors. State and local governments appeared to be less discriminatory with respect to race than the private sector. These results confirmed suggestions by Long (1976) and Smith (1977a).

The standard methodology used in examining public and private wage differentials was developed independently by Blinder (1973) and Oaxaca (1973) to examine wage discrimination versus wage differentials due to employee characteristics. This methodology or variants of it have been used in many studies since that time. Mueller (2000) is a good example of a study using the basic model and then expanding upon this model to examine earnings differentials in Canada. Pierce (1999) changed the basic model to a share equation and examined compensation including benefits rather than only earnings. The basic methodology decomposes the differentials between pri-

vate and public sector earnings into one component that is due to differences in the attributes of the employees and a second component that measures any residual difference. This is sometimes referred to as "an earnings surplus" or as "rent."

It is obvious, however, that the residual difference, or some part of it, may be due to differences in job characteristics or personal characteristics that are simply not being observed. Mueller recognized this problem:

Use of this technique does provide us with a simple method to answer the hypothetical question: "What if public-sector workers were paid the same rate of compensation as their private-sector counterparts?" An important shortcoming of the decomposition technique is the fact that these techniques cannot capture unobservable characteristics. For example, workers may have some characteristic that can raise productivity, and hence wages, but is not captured by the usual variables used in wage regressions. For this reason, government wages could be higher than those in the private sector if government workers have more of these productivity-enhancing yet unobservable characteristics. (Mueller [2000]: 382).

Mueller assumed such unobservable characteristics would be fixed over time and used a fixed-effect model to examine this question. This model requires data on intersectoral movements of workers and is therefore not possible with a single-time, cross-sectional data set. Mueller discovered that in Canada wage differentials differed by gender and level of government with the highest differentials showing wage premiums for females in federal jobs. The differentials were reduced at lower levels of government and were inconclusive for male workers.

Juhn, Murphy, and Pierce (1993) used similar methodology to examine changes in wage differentials by skill level over time and uncovered increasing differentials even among groups with similar schooling and labor experience. Their explanation for the differentials was that there had been a general rise in returns for skills that could not be measured with schooling or experience.

The number of studies specifically examining fringe benefits or total compensation is limited. Cutler and Madrian (1998) did examine a limited form of compensation defined as wages plus health insurance benefits. They noted that the theoretical consideration given to health insurance suggested that as costs increased those firms who did provide health insurance would lower their wages. Workers who wanted health insurance accepted lower wages, and those who did not value health insurance located jobs with higher wages and no health insurance. These results have been demonstrated in empirical studies, such as those of Gruber and Kruger (1991), Gruber (1994) and Sheiner (1995). These findings suggest that if workers value the benefit, then lower wages will be accepted until at the extreme if workers fully value the ben-

efit, then the lower wages will offset the cost of the benefit to the employer.

Cutler and Madrian (1998) suggested that there might be additional complications. In some cases, employees might already be working at or near minimum wage in which case the additional costs of benefits could not be offset by lower wages. There was also no assurance that employees fully valued the benefits, which meant employers were not able to fully pay the costs of such benefits from wage cuts. In this case, benefits might alter the hiring decisions of the firm. For example, employers might decide to work existing workers longer hours, since most benefits are fixed amounts per worker rather than per hour. Cutler and Madrian also demonstrated that rising health costs during the 1980's led to increases in hours worked for employees. Another trade-off might be an increase in the required quality of the workers hired so that increased productivity might substitute for decreases in wages. Finally, employers might choose to shift to subcontractors or temporary workers for some jobs in order to reduce the benefit costs paid.

SECTION II: ANALYSIS

The primary purpose of this section is to examine the degree of comparability between compensation, including both wages and benefits, paid to workers covered by the Mississippi State Personnel Board (SPB) and total compensation paid to private sector workers in the state. One of the continuing concerns in determining compensation for state workers is the appropriate group for comparison. Arguments can be made that the primary basis of comparison for some state employees should be state workers from other states, or private sector workers from other states, or even federal workers nationwide.

The basis of comparison chosen here is private sector employees in the State of Mississippi. This choice was based on the assumption that the primary alternative employment for most state employees is in the private sector. Of course, this is not always the case. For some workers, particularly those with higher skills, the appropriate source of alternative employment is perhaps in another state and could also be in the private or the public sector. Nevertheless, for the majority of state workers, employment elsewhere in the state is the most likely alternative.

Conversion of SPB codes to ESC codes

Approximately 675 private firms, who each employ more than 100 employees, were surveyed by mail in May, June, and September of 2000. The sample populations were chosen using a sampling technique whereby a random sample of firms was chosen for each occupational

group based upon the likelihood of employing that particular group of occupations. These "likelihoods" were calculated based upon BLS data indicating the number employees in such occupations for each Standard Industrial Classification (SIC) code. The initial population from which the sample was chosen included those private sector firms employing over 100 employees and listed in the **American Business Directory (1998-99 edition)**. Surveys were mailed to 675 firms. Of these surveys, 72 were returned as undeliverable, because the firm had moved, gone out of business, or perhaps the initial information was incorrect leaving 603 possible questionnaires. After the initial mailing, a second mailing was made to all those businesses who had not responded. After very disappointing results from the second mailing, each of the firms who had not responded was contacted by telephone. In total, after all of the efforts to obtain additional usable responses to the questionnaire, responses were received from only 93 organizations (about 15.4%). Only 43 of these responses (7.13%) were usable since many either did not complete all of the necessary categories of information or answers were found to be inconsistent and highly suspect. Of the original 15 job categories for which data were sought, only nine were represented in the final sample.

The final survey sample included these 43 organizations. While the number of such organizations is relatively small, it does offer significant insight into the variety of benefits offered in the private sector of Mississippi. In terms of representing the entire private sector, the sample is obviously biased upward with respect to employment size since only larger firms were surveyed. This was based on the assumption that the primary markets for labor are similar for large firms and the state. It is also assumed that larger organizations are capable of more effectively monitoring the labor market and that compensation within such firms is more likely to be near true market levels than would be the case for many small firms. More importantly, many of the jobs for which people are hired within the SPB system have no equivalent except within larger organizations. Therefore, the primary alternative of employment for most SPB employees is with such firms.

Within this study, an observation is defined as information on one job classification at one organization. In an effort to obtain more information each firm was only asked about one Employment Security Code (ESC) job classification. Each of those observations contains average compensation and demographic characteristics for all workers in that occupational category for a specific firm or organization. These 43 observations contain information on 258 Mississippi employees in nine job categories within the private sector.

Survey data were aggregated into the nine job classification categories for the purposes of basic data description. These categories are aggregations within general job codes based upon the Employment Security Codes. Thus, for example, all job codes within the janitor, maids and housekeepers, and building maintenance categories were aggregated into a "Cleaning and Building Service Occupations" category Office of Employment Security (OES) code 67000. SPB data from fiscal year 2000 were

also examined in the analysis. State Personnel Board codes were converted to Employee Security Codes, and those groups were aggregated to the same level as for the survey data. The SPB data for equivalent occupations to the nine OES codes covered by the private sector sample included individual information on 1,812 state employees.

Methodology for Conversion of SPB To ESC Codes

In order to make the comparison between public and private sector jobs, one uniform system had to be applied to both categories of employment. The methodology used for conversion of State Personnel Board (SPB) job codes into Employment Security Commission (ESC) codes was taken from a previous study (Campbell, et al., 1996). The classification system was developed by a study team, which examined a number of alternative schemes. The team determined that the ESC classification system would best allow for the segregation of different job classifications based on levels of achievement and ease of implementation within job categories keeping in mind the particular issues pertinent to the private sector. A final factor in selecting the Office of Employment Security (OES) classifications as the base for this study was the fact that the private sector firms would already be at least somewhat familiar with the codes, since the Mississippi Employment Security Commission (MESCC) uses these codes in its own data collection efforts within the private sector.

The study team then examined job descriptions maintained by the Mississippi State Personnel Board, evaluated each in terms of the MESCC codes, and assigned an MESCC code to each SPB code based upon the functions, educational requirements, and required skills for jobs in both classifications. Since the Mississippi National Guard employees fall outside of the SPB system, all job codes pertinent to the National Guard positions (primarily those in the MESCC 5000-range of state job occupation codes) were eliminated from the analysis. Not every state job had a strictly comparable private sector counterpart, and in such situations the job was assigned to an "other" category and was also included as a subcategory in a larger overall classification with some similarities.

A data file was created which converted each of the SPB jobs into an equivalent OES code, thus allowing a direct comparison across the two sectors. This study was originally to be limited to 15 SPB codes, but was expanded to attempt to cover 15 ESC codes. The ESC codes included in the final sample cover 212 SPB job codes.

Methodology for Comparing Compensation

The basic methodology used here is fairly common and relies upon a framework originally developed by Blinder (1973) and Oaxaca (1973). The model is the same one used to determine discrimination in labor markets. The underlying premise is to assume that workers with the same demographic, experiential, and human capital characteristics should earn approximately the same amounts regardless of where they are employed. We include occu-

pational category in our model as a worker characteristic and examine the differences between private and public sector workers. We also use total annual compensation rather than hourly earnings (which is used in most models). Differences in the underlying compensation structure are revealed in intercept terms, dummy variable coefficients, and variations in slope coefficients.

The data used include the log of compensation and workers' characteristics from both the public database and the private sector sample. The underlying model for each group includes the natural logarithm of compensation as the dependent variable, a variable for educational level, age, race (race is used as a 0 or 1 for individual data [with 1 being white for state data], while it is expressed as a percent between 0 and 1 of the occupation that is white for private firm data), current job tenure, current job tenure squared, size of the firm, and occupational dummy. The data for the private sector are the averages for each job category at a specific firm. Thus, the observation is the firm. For the public sector model, the observation is the individual. Unfortunately, gender and age data were not initially collected on the firms, but each firm was called after surveys had been returned and that information was requested.

Following Berndt's (1991) explanation of Blinder (1973) and Oaxaca (1973), the compensation equation is first estimated for each of the groups separately with parameters estimated in:

$$\ln C_f = X_f \beta_f + u_f \text{ for the firms, and}$$

$$\ln C_g = X_g \beta_g + u_g \text{ for the public sector group.}$$

Here, C and u are vectors of compensation and random disturbance terms respectively, while X is a matrix of observations for the explanatory variables in each of the two groups. Defining the least squares estimates of the β 's as b with the same subscripts as above, the sample variance of $(b_f - b_g)$ will equal the sum of variances,

$$\text{Var}(b_f) + \text{Var}(b_g) \text{ for Cov}(b_f, b_g) = 0.$$

Then the difference in the average of the natural logs of compensation $(\ln C)^*$ will be:

$$(\ln C_f)^* - (\ln C_g)^* = (X_f^*) b_f - (X_g^*) b_g.$$

X^* denotes the mean value of X . Defining the difference between the firm and public sector coefficients as Δb , the difference between mean natural logs of compensation will be:

$$(\ln C_f)^* - (\ln C_g)^* = b_f (X_f^* - X_g^*) + (X_g^*) \Delta b.$$

This equation shows a decomposition of the differences in compensation into both the effects due to differences in the average characteristics of the workers for the two groups, $b_f (X_f^* - X_g^*)$ and the effects of structural differences in compensation between the two sectors. Here the differences in average characteristics are weighted by private sector estimated coefficients, while differences in the estimated coefficients are weighted by average characteristics of the public sector workers.

Table 3: Firms and Employees Covered by Survey Results

Description	ESC Code	Firms	Employees
Accountants and Auditors	21114	6	12
Data Base Administrators	25103	3	3
Mathematical Scientists	25310	1	1
First-line Supervisors and Managers/Supervisors - Clerical and Administrative Support	51002	3	16
Secretaries Except Legal and Medical	55108	4	22
Typists, Including Word Processors	55307	4	13
Personnel Clerks, Except Payroll and Times-keeping	55314	2	2
General Office Clerks	55347	8	89
All Cleaning and Building Service Personnel	67000	12	100
Total		43	258

Next, an alternative estimation is made by weighting the average characteristics by public sector estimated coefficients and then weighting the differences in average

characteristics by public sector estimated coefficients. Differences in the estimated coefficients are weighted by average characteristics of the private sector workers such that:

$$(InC_f)^* - (InC_p)^* = \Delta b (X_f^* - X_p^*) + b_f (X_p^*)$$

Both of the above procedures are used to produce a range of effects, since either procedure alone results in the equivalent of an index number problem. Unfortunately, the limited response in this study prohibited an effective estimation of the equation for the private sector. Therefore, the comparison was limited to the use of coefficients from the public sector equation being used to estimate wages and compensation with the private sector data.

Characteristics of the Sample Data

The basic description of each category, the number of firms represented, and the number of employees represented for each category are shown in Table 3.

The racial breakdown of the employees represented in the survey was 75.25 percent White, 22.83 percent Black, and 1.76 percent Other Race. The numbers of years such employees had worked for the firms on average varied from .2 years for ESC code 25310 to 14.5 years for OES code 55314 (Table 4).

Educational achievement was measured by asking for an average educational classification for the workers in the occupational category within the firm responding. The choices were: a) less than high school, b) high school, c)

Table 4: Tenure on the Job and Racial Characteristics For Employees Covered by Survey Results

Description	ESC Code	Average* Percent White	Average* Percent Black	Average* Percent "Other Race"	Average* Years Worked for Firm
Accountants and Auditors	21114	100.00	0.00	0.00	7.95
Data Base Administrators	25103	67.00	33.00	0.00	4.30
Mathematical Scientists	25310	100.00	0.00	0.00	0.20
First-line Supervisors and Managers/Supervisors - Clerical and Administrative Support	51002	81.25	12.50	6.25	8.12
Secretaries Except Legal and Medical	55108	91.00	9.00	0.00	9.57
Typists, Including Word Processors	55307	100.00	0.00	0.00	9.03
Personnel Clerks, Except Payroll and Times-keeping	55314	100.00	0.00	0.00	14.50
General Office Clerks	55347	89.00	9.00	2.00	5.70
All Cleaning and Building Service Personnel	67000	48.00	52.00	0.00	6.23
Total Weighted %		72.25	22.83	1.76	6.70

*Averages are weighted by the number of employees.

Table 5: Average Percents by Educational Attainment for Employees Covered by Survey Results

Description	ESC Code	Percent* Less than High School	Percent* High School	Percent* Some College	Percent* Vo-Tech School	Percent* Associate Degree	Percent* College	Percent* Post-Graduate
Accountants and Auditors	21114	0.00	0.00	8.33	0.00	0.00	91.67	0.00
Data Base Administrators	25103	0.00	0.00	0.00	0.00	33.33	66.67	0.00
Mathematical Scientists	25310	0.00	0.00	0.00	0.00	0.00	0.00	100.00
First-line Supervisors and Managers/Supervisors - Clerical and Administrative Support	51002	0.00	0.00	100.00	0.00	0.00	0.00	0.00
Secretaries Except Legal and Medical	55108	0.00	22.70	77.30	0.00	0.00	0.00	0.00
Typists, Including Word Processors	55307	0.00	76.90	23.10	0.00	0.00	0.00	0.00
Personnel Clerks, Except Payroll and Times-keeping	55314	0.00	50.00	0.00	0.00	0.00	50.00	0.00
General Office Clerks	55347	0.00	82.00	12.40	0.00	2.80	2.80	0.00
All Cleaning and Building Service Personnel	67000	4.00	62.00	32.00	0.00	2.00	0.00	0.00
Total Weighted %		1.50	58.50	31.00	0.00	2.10	6.40	0.04

*Averages are weighted by the number of employees.

some college, d) vocational school, e) associate degree, f) college, or g) post college. This allowed a response that would not only include an approximate number of years for each observation but would also include a qualitative aspect as well. For example, someone with “some col-

lege” might have the same number of years of schooling as someone with an associate degree, but the quality of education is likely to be different. A summary of average educational attainment for the respondents’ employees is shown in Table 5.

Table 6: Comparison of Average Fringe Benefits and Compensation for the Private Sector Sample

Description	ESC Code	Average Base Salary and Wages*	Average Cost of Fringe Benefits*	Average Total Compensation*	Fringe Benefits as a Percent of Compensation
Accountants and Auditors	21114	\$ 46,084.06	\$ 9,518.10	\$ 55,602.16	17.12%
Data Base Administrators	25103	47,333.33	13,705.96	61,039.29	22.45%
Mathematical Scientists	25310	45,320.00	16,421.00	61,741.00	26.60%
First-line Supervisors and Managers/Supervisors - Clerical and Administrative Support	51002	37,008.13	9,614.16	46,622.29	20.62%
Secretaries Except Legal and Medical	55108	18,013.91	4,545.05	22,558.96	20.15%
Typists, Including Word Processors	55307	17,165.23	5,096.92	22,262.15	22.89%
Personnel Clerks, Except Payroll and Times-keeping	55314	29,100.00	8,860.48	37,960.48	23.34%
General Office Clerks	55347	27,842.18	12,867.81	40,709.99	31.61%
All Cleaning and Building Service Personnel	67000	19,669.45	7,602.70	27,272.15	27.88%
Total Weighted Average		\$ 25,019.42	\$ 9,360.70	\$ 34,380.12	27.23% *

*Wages, Fringes, and Compensation are averages weighted by number of employees in each category

FRINGE BENEFITS AND THE VARIABLE COMPENSATION PLAN OF THE MISSISSIPPI STATE PERSONNEL BOARD

Table 7: Size of Firms and Average Contributions to Retirement, Health Insurance, and Life Insurances by Firms in the Survey Sample

Description	ESC Code	*Average Annual Gross Payroll	*Average Full-time Employment	Percent Contributing to Retirement	Percent Contributing to Life Insurance	Percent Contributing to Health Insurance
Accountants and Auditors	21114	\$ 6,844,596	275	83.30%	83.30%	100.00%
Data Base Administrators	25103	5,295,667	296	100.00%	66.70%	66.67%
Mathematical Scientists	25310	10,106,000	232	100.00%	100.00%	100.00%
First-line Supervisors and Managers/Supervisors - Clerical and Administrative Support	51002	1,096,017	36	66.70%	66.70%	100.00%
Secretaries Except Legal and Medical	55108	1,103,722	62	0.00%	25.00%	50.00%
Typists, Including Word Processors	55307	1,056,885	38	25.00%	66.70%	100.00%
Personnel Clerks, Except Payroll and Times-keeping	55314	1,221,611	48	50.00%	100.00%	100.00%
General Office Clerks	55347	1,522,171	66	50.00%	75.00%	87.50%
All Cleaning and Building Service Personnel	67000	5,761,803	125	66.70%	100.00%	100.00%
Total Weighted Average*		\$ 3,798,291	40.33	51.40%	74.00%	88.60%

*Averages are weighted by the number of employees.

Table 8: Selected Fringe Benefits in Companies Covered by Survey Results

Description	ESC Code	*Average Paid Holidays	Percent Offering Cafeteria Plans	Percent Offering Employee Credit Unions	Percent Offering Paid Auto Travel	Percent Offering Deferred Compensation Plans	Percent Offering Unpaid Leave	Percent Offering Job Related Training
Accountants and Auditors	21114	6.00	100.0%	50.0%	66.7%	38.7%	50.0%	83.3%
Data Base Administrators	25103	7.70	100.0%	33.3%	100.0%	33.3%	66.7%	100.0%
Mathematical Scientists	25310	8.00	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
First-line Supervisors and Managers/Supervisors - Clerical and Administrative Support	51002	8.70	66.7%	33.3%	66.7%	66.7%	33.3%	66.7%
Secretaries Except Legal and Medical	55108	6.75	25.0%	0.0%	50.0%	0.0%	0.0%	50.0%
Typists, Including Word Processors	55307	4.25	25.0%	25.0%	50.0%	25.0%	25.0%	50.0%
Personnel Clerks, Except Payroll and Times-keeping	55314	4.00	50.0%	100.0%	100.0%	0.0%	0.00%	50.0%
General Office Clerks	55347	6.00	87.5%	37.5%	50.0%	25.0%	25.0%	62.5%
All Cleaning and Building Service Personnel	67000	7.50	66.7%	33.3%	50.0%	50.0%	66.7%	83.3%
Total Weighted Average*		6.40	62.9%	34.2%	62.9%	40.9%	34.3%	68.6%

*Averages are weighted by the number of employees.

The workforce in the sample is primarily composed of those with a high school education or some college, with relatively few associate degree holders and college graduates. Conspicuous by their absence are vocational school graduates. It may be that employers are not completely aware of their employees' academic qualifications. It is also quite possible that there were misunderstandings among respondents as to the difference between vocational school graduates and those with associates' degrees.

Comparisons of average base wage and salary to average fringe benefits for each occupational category is shown in Table 6. There is wide variation in base wages. The range of base salary and wages runs from a low of \$17,165 to a high of \$47,333 with benefits from 17.12 percent of total compensation to 31.61 percent. There is, however, much less variation in benefits as a percentage of total compensation than there is in average wages and salaries. The weighted average base salary for the entire sample is \$25,019 with the weighted average fringes amounting to 27.23% of the weighted average total compensation of \$34,380.

The average percent of compensation accounted for by fringe benefits is very similar to the numbers indicated by the BLS survey (Watters, 2000) of 26.5 percent for the South and 27 percent for the United States. The fact that the sample is somewhat higher is probably due to the upward bias brought about by only including larger firms in the sample and by the number of employees in two of the higher percentage occupations but does appear quite believable. Moreover, the range of compensation accounted

for by fringe benefits for the majority of occupations in the sample is very close to that found for the equivalent occupations covered by the State Personnel Board (21.39 percent).

The sizes of firms as indicated by average gross payroll and average full-time employees are shown in Table 7. The only surprising information is that the firms were initially chosen to include only firms with more than 100 employees. It does appear that either employment was overestimated for some firms or, if they employ more than 100 employees, these are not all full-time employees. Also, shown in Table 7 are the percentage of employers contributing to retirement programs, life insurance premiums, and health insurance premiums. The weighted average size of the firms (weighted by number of firms) was \$3,798,291 in annual gross payroll and 40.33 employees. The average percentage contributions to retirement for each occupational category varied between 0 and 100 percent with the highest percentages generally occurring for those occupations that were relatively high-wage occupations. However, it should be remembered that these percentages apply to all employees at the firm — not just those in the chosen occupation.

Information about the percentage of employers in the sample (by occupational category) who offer such benefits as cafeteria plans, deferred compensation plans, job related training, and other categories is shown in Table 8 and also in Table 9.

Table 9: Selected Fringe Benefits in Companies Covered by Survey Results

Description	ESC Code	Percent Offering Priority Re-Employment	Percent Offering Wage Increases for Additional Education	Percent Offering Educational Leave	Percent Offering Family Leave
Accountants and Auditors	21114	16.7%	16.7%	33.3%	66.7%
Data Base Administrators	25103	100.0%	66.7%	66.7%	100.0%
Mathematical Scientists	25310	100.0%	0.0%	0.0%	100.0%
First-line Supervisors and Managers/Supervisors - Clerical and Administrative Support	51002	0.0%	33.3%	0.0%	33.3%
Secretaries Except Legal and Medical	55108	25.0%	0.0%	0.0%	50.0%
Typists, Including Word Processors	55307	25.0%	0.0%	0.0%	50.0%
Personnel Clerks, Except Payroll and Times-keeping	55314	0.0%	0.0%	0.0%	0.0%
General Office Clerks	55347	25.0%	37.5	0.0%	50.0%
All Cleaning and Building Service Personnel	67000	50.0%	33.3	16.7%	100.0%
Total Weighted Average*		34.3%	28.6%	17.1%	65.7%

*Averages are weighted by the number of employees.

Table 10: Characteristics of the SPB Covered Employees in the Same Occupational Categories as the Private Sector Sample

Description	ESC Code	Employees in Category	Average Salary	Average Benefit Costs	Pct Male	Pct White	Average Age	Average Tenure	Average Education
Accountants and Auditors	21114	182	\$ 34,994	\$ 8,634	38.7%	69.1%	38.7	6.3	12.6
First-line Supervisors and Managers/Supervisors - Clerical and Administrative Support	51002	624	27,827	7,578	9.5%	59.9%	44.8	7.3	12.7
Secretaries Except Legal & Medical	55108	636	21,282	5,910	0.2%	65.2%	50.1	5.4	10.9
General Office Clerks	55347	88	19,132	5,447	2.3%	57.5%	42.6	5.9	10.2
All Cleaning & Building Personnel	67000	286	14,746	4,238	57.5%	30.9%	50.2	5.0	8.9
Overall Averages*		1,812	\$ 23,761	\$ 6,490	16.3%	57.8%	47.8	6.1	11.3

*Overall averages are weighted by number of employees.

Table 11: Compensation Package, State Personnel Board; Fiscal Year 2000

	Fringe Rate	Average Annual State Fringe Costs Per Employee	Average Annual Salary Plus Fringe Cost
Base			\$ 27,358
Social Security	6.20%	\$ 1,696.20	
Medicare	1.45%	396.69	
Workmen's Compensation	1.60%	437.73	
Retirement	9.75%	2,667.41	
Life Insurance	\$0.17/\$1,000	112.20	
Health Insurance	\$172/month	2,064.00	
Unemployment Insurance	\$1.25/month	15.00	
Sick Leave	10.5 days	1,101.24	
Annual Leave	21 days	2,202.48	
Holidays	10 days	1,048.80	
Total		\$ 11,741.75	\$ 39,099.75

SOURCE: Mississippi State Personnel Board

Characteristics of the SPB Data

General characteristics of the employees who are covered by the State Personnel Board and equivalent to those occupations in the private sector sample are shown in Table 10. Only those employees who were full-time and had been in those jobs for the entire year were included in the group. Only five of the occupational categories from the private sector sample were located in the remaining State Personnel Board occupations. Average salaries varied from \$14,746 to \$34,994.

The cost of fringes as a percent of total compensation for the occupational categories employed covered by the State Personnel Board that are equivalent to those selected in the private sector sample is only 21.45 percent. It should also be noticed that the base salary of the SPB data for these occupations is heavily skewed toward lower-income occupations with the weighted average base salary equal to \$23,760.

Table 11 supplied by the State Personnel Board “represents the average annual salary plus fringe benefits costs during fiscal year 2000. Major medical leave and personal leave are based on the average service time for full-time employment of eight (8) years” (State Personnel Board, 2000). Thus, the fringe benefits as a percentage of compensation for the average compensation package would be 30 percent. This is somewhat above the overall rate for the South, but also well above the rate for those in the SPB groups that correspond with the occupational groups chosen in the private sector sample.

The Models

The initial model specification used in this section is very similar to that used in Campbell, et al. (1996). It is apparent that the lack of data from the survey will result in less than satisfactory results when the model is run using that data. However, there are 1,812 observations in the SPB data that correspond to the same occupations as gathered in the survey.

The first model used is a classic model that examines the relationship between the natural log of wages or salary, education, experience, gender, and race. Specifically, the model used is:

$$LNSAL = \alpha_0 + \alpha_1 ED + \alpha_2 (ED*EX) + \alpha_3 EX + \alpha_4 EX^2 + \alpha_5 TEN + \alpha_6 G + \alpha_7 R + \mu \quad (5)$$

Where: *LNSAL* = the natural log of annual wages or salary;

ED = Years of Education;

EX = Years of Experience (Age - Education - 6);

*ED*EX* = the interaction between education and experience;

*EX*² = Experience squared

TEN = Years employed in the agency;

G = Gender (dummy =1 for Male and 0 for Female);

R = Race (dummy =1 for White and 0 for Nonwhite); and

μ = random disturbance term

Thus, human capital is included as both a linear function and a function of education. No variables are included to account for specific occupational category, geographic cost of living differences, or urban versus rural place of employment.

Since the dependent variable is the natural logarithm of annual earnings, the regression coefficients may be interpreted as estimates of the percentage effects on annual earnings of changes in each of the independent variables.

Next, the same model is estimated for the SPB-covered employees again, except the left-hand side variable used is the cost of total compensation. Otherwise, the model is precisely the same as equation (5). The results for the salary and compensation equations are shown in Table 12 along with the results from the 1996 study (Campbell, et al., 1996). There are two slight differences between the 1996 equations and those in the current study. The 1996 study that was estimated for all SPB covered employees, regardless of occupational category, used a variable for agency tenure in months rather than in years (as in the current study). The 1996 estimate also used experience as Age - Education - 5 (instead of 6). The effects of these two changes on the results, however, should be very minor.

Table 12: Comparison of Estimated Equations

	Current Study with LNSAL	Current Study with LNCOMP	1996 Study with LNSAL
α^0 (constant)	9.6034825**	9.8455287**	8.1924**
α^1 (ED)	.0312463**	.0309804**	.088858**
α^2 (EX)	-.0000007**	-.0000007**	.034228**
α^3 (EDEX)	.0013479**	.0013706**	-0.0008381**
α^4 (EX ²)	-.0000007**	-.0000007**	-0.00035608**
α^5 (TEN)	.0987104**	.0103695**	.00077847**
α^6 (G)	.0995605**	.1021126**	.096587**
α^7 (R)	.1482920**	.1469379**	.10130**
F-statistic	360.16	204.10	1686.3**
Adjusted R ²	.48443	.34704	.60146**

Notes:

** denotes significance at 5%.

TEN is in years for current study and months for 1996 study. The 1996 study included all State Personnel Board employees, whereas the current study is limited to job codes equivalent to the private sector sample.

EX=Age - Education - 6 in current study and Age - Education -5 in 1996 study.

The only significant changes between the current equation and the 1996 specification are the changes of signs on experience (EX) and the interaction between education and experience (EDEX). It is not surprising that the specific results should differ for the current and 1996 results, particularly in light of the fact that the equations were estimated using very different bases.

The results from the two equations in this study were used next to estimate wages for those private sector employees in the survey for whom age and gender were available. It is a very small sample; nevertheless, the examination does give some indication of the salary and compensation for such employees if they had been employed in the SPB wage-structure. Estimates using the 1996 regression were also used. As expected, after four years the estimates of private sector wages under the SPB equation showed lower than actual wages in all but two of the observations. The results of the estimations using the current regression coefficients are shown in Table 13 below. The data have been arranged from lowest (real) annual salary to highest for the twenty-three observations for which all data are available.

For this group, 14 of the lowest 15 actual salary worker groups (those making less than \$30,000 and one of those making \$30,000) would have made higher salaries under the SPB wage-structure than they were actually making in the private sector. On the other hand, those employee groups making more than \$30,000 (and one group making

Table 13: Comparison of Estimated and Actual Salary and Compensation Using First Regression Equations

Observation	Sample Actual Annual Salary	Estimated Salary Under SPB	Actual Minus Estimated Salary	Sample Actual Cost of Compensation	Estimated Cost of Compensation under SPB	Actual Minus Estimated Compensation
1	\$ 11,000	\$ 24,378	(\$ 13,378)	\$ 20,478	\$ 32,002	(\$ 11,524)
2	16,520	30,137	(13,616)	21,944	39,910	(17,966)
3	16,640	26,312	(9,672)	20,332	23,522	(13,190)
4	17,758	26,840	(9,082)	24,283	34,767	(10,484)
5	18,117	21,656	(3,539)	21,897	28,122	(6,225)
6	18,443	26,021	(7,577)	26,457	33,638	(7,181)
7	19,000	28,902	(9,902)	23,164	38,265	(15,101)
8	20,800	27,640	(6,840)	24,152	35,343	(11,191)
9	22,590	30,820	(8,230)	33,373	41,153	(7,780)
10	24,000	29,868	(5,868)	27,428	39,140	(11,712)
11	24,500	28,396	(3,896)	31,572	37,130	(5,558)
12	26,867	27,692	(826)	32,664	35,863	(3,200)
13	27,000	36,955	(9,955)	35,337	50,427	(15,091)
14	28,304	26,076	2,228	35,663	33,275	2,388
15	30,000	33,571	(3,571)	38,585	43,626	(5,042)
16	30,000	28,818	1,182	35,926	36,762	(836)
17	42,000	31,704	10,296	54,072	41,821	12,252
18	43,750	33,881	9,869	50,417	44,671	5,746
19	44,000	30,086	13,914	54,346	39,739	14,607
20	44,192	30,918	13,274	46,180	39,673	6,507
21	45,320	33,020	12,300	61,741	42,240	19,501
22	47,000	29,755	17,225	55,156	39,254	15,901
23	56,000	26,118	29,882	74,318	33,300	41,018
Average	29,296	29,211	183	36,934	37,985	(1,050)

\$30,000) would have made less salary under the SPB wage-structure than their actual private sector jobs produced. Nearly the same situation is shown for compensation, except that 15 of the 16 lowest actual salary worker groups would have earned higher total compensation under the SPB wage-structure than their actual private sector jobs produced. All of those making salaries of \$42,000 or more would have received less under the SPB compensation structure. The mean absolute percent error (MAPE), which is calculated as the mean of the absolute values of differences between actual and estimated amounts and expressed as percentages of the actual amounts, for these estimates

was 35.88 percent for the salary equation and 33.14 percent for the compensation equation.

In order to use the larger 43-group sample for which all data except gender and age are available, an alternate regression equation was developed for the equivalent SPB occupational group. Here, experience could not be calculated. The following equation was used instead.

$$\text{For salary: } \text{LNSAL} = \alpha_0 + \alpha_1 \text{R} + \alpha_2 \text{TEN} + \alpha_3 \text{ED} + \alpha_4 (\text{ED} * \text{TEN}) + \alpha_5 \text{TEN}^2 + \alpha_6 \text{ED}^2 + \alpha_7 \text{OCC}_1 + \alpha_8 \text{OCC}_2 + \alpha_9 \text{OCC}_3 + \alpha_{10} \text{OCC}_4 + \alpha_{11} \text{OCC}_5 + \mu \quad (6)$$

For compensation: $LNCOMP = \alpha_0 + \alpha_1 R + \alpha_2 TEN + \alpha_3 ED + \alpha_4 (ED * TEN) + \alpha_5 TEN^2 + \alpha_6 ED^2 + \alpha_7 OCC_1 + \alpha_8 OCC_2 + \alpha_9 OCC_3 + \alpha_{10} OCC_4 + \alpha_{11} OCC_5 + \mu$ (7)

Where: $LNSAL$ = the natural log of annual wages or salary;

$LNCOMP$ = the natural log of the cost of compensation;

R = Race (dummy = 1 for White and 0 for Nonwhite);

ED = Years of Education;

$ED * TEN$ = the interaction between education and years employed at the agency;

TEN = Years employed in the agency;

OCC_1 = Occupation #1, dummy = 1 if occupation = Administrative Service Manager (ESC 13014), all else = 0;

OCC_2 = Occupation #2, dummy = 1 if occupation = Accountants and Auditors (ESC 21114), all else = 0;

OCC_3 = Occupation #3, dummy = 1 if occupation = Managers and Supervisors (ESC 51002), all else = 0;

OCC_4 = Occupation #4, dummy = 1 if occupation = Secretaries Except Legal (ESC 55108), all else = 0;

OCC_5 = Occupation #5, dummy = 1 if occupation = General Office Clerk (ESC 55347), all else = 0;

OCC_6 = Occupation #6, dummy = 1 if occupation = Building Services (ESC 67000), all else = 0.

OCC_6 is the default dummy; therefore, when all other dummies are set equal to 0, OCC_6 will be equal to 1 by default even though it is not specified or estimated directly in the model.

The results for the alternative model actually turn out better than the more traditional model. These results are shown in Table 14 along with the estimated salary and compensation for each group using the model results.

The results indicate that when occupational categories are included (even in the absence of data on gender and experience) the equations fit the data much better. This is seen in the adjusted R^2 values that indicate for the salary equations almost 88 percent of the variation in the dependent variable is explained and for the compensation equation nearly 85 percent is explained. These are much higher than was the case for the first set of equations, where adjusted R^2 values were .48 and .35 for the salary and compensation equations, respectively. The coefficients from the alternative equation indicate that whites tend to be paid more than nonwhites probably owing to human capital characteristics not captured in the data. Both time on the job and education contribute positively to wage and salary. Finally, since all of the coefficients for the occupation dummies are positive, this indicates that the lowest wage and compensation group tested is the building services group. The application of these coefficients to the data for the 43 industry/occupation groups from the private sector is shown in Table 15 arranged from the lowest wage to highest wage groups.

These results are not nearly as clear-cut as was the case for the first set of regression estimates, although the general pattern is similar. Those individuals in the private sector who are at the higher income levels tend to be better off with private sector wages and with private sector compensation than they would be with a SPB wage and compensation structure. This is true for all observations above \$33,000 in private sector wages. Below \$18,000 in private sector wages, all but one of the observations would be better off under the SPB wage structure, and all but two would fare better under the total compensation structure of the SPB. The observations between \$18,000 and \$33,000 are mixed. However, 18 of the 24 would be better off under their existing private sector wage structure than under the SPB wage structure, and 17 of the 24 would be better off with the private sector total compensation package than with that of the SPB. Overall, the results showed a lower MAPE (mean absolute percent error) for the estimates made with the coefficients from the alternative equations specifications.

Table 14: Comparison of Estimated and Actual Salary and Compensation Using Alternative Regression Equations

	Current Study with LNSAL	Current Study with LNCOMP
α^0 (constant)	9.4093764**	9.6571024**
α^1 (R)	.0472470**	.0478745**
α^2 (TEN)	.0266507**	.0000003**
α^3 (ED)	.0083161**	.0083435**
α^4 (TEN ²)	-.0002165**	-.0002705**
α^5 (EDTEN)	-.0006639**	-.0006785**
α^6 (ED ²)	-.0000000004**	-.0000000004**
α^7 (OCC1)	.9125969**	.9022455**
α^8 (OCC2)	.7923967**	.7617797**
α^9 (OCC3)	.5593826**	.5472998**
α^{10} (OCC4)	.3346074**	.3273656**
α^{11} (OCC5)	.2222258**	.2203419**
F-statistic	1751.90	1333.02
Adjusted R ²	.87805	.84562

** denotes significance at 5%

Table 15: Comparison of Estimated and Actual Salary and Compensation Using Alternative Regression Equations

Observation	Sample Actual Annual Salary	Estimated Salary Under SPB	Actual Minus Estimated Salary	Sample Actual Cost of Compensation	Estimated Cost of Compensation under SPB	Actual Minus Estimated Compensation
1	\$ 11,000	\$ 15,767	(\$ 4,767)	\$ 20,478	\$ 20,337	\$ 141
2	11,000	15,972	(4,972)	20,478	20,585	(106)
3	16,000	20,384	(4,384)	17,440	25,973	(8,533)
4	16,000	16,995	(995)	20,280	21,969	(1,689)
5	16,520	23,744	(7,223)	21,944	30,451	(8,507)
6	16,640	14,587	2,053	21,768	18,722	3,046
7	16,640	18,070	(1,430)	20,332	23,149	(2,817)
8	17,758	19,594	(1,836)	24,283	25,185	(902)
9	18,117	14,562	3,555	21,897	18,759	3,139
10	18,117	15,096	3,020	21,897	19,423	2,475
11	18,443	15,355	3,088	26,457	19,762	6,695
12	18,443	15,581	2,862	26,457	20,044	6,413
13	19,000	20,725	(1,725)	23,164	26,726	(3,562)
14	20,500	23,857	(3,357)	22,543	30,625	(8,082)
15	20,800	14,909	5,891	24,152	19,150	5,002
16	22,193	16,048	6,145	22,193	20,719	1,474
17	22,193	16,246	5,947	22,193	20,954	1,239
18	22,590	43,352	(20,762)	33,373	55,492	(22,119)
19	23,733	21,154	2,579	32,307	27,210	5,098
20	24,000	22,947	1,053	27,428	29,395	(1,967)
21	24,500	16,130	8,370	31,572	20,793	10,779
22	24,500	16,238	8,262	31,572	20,925	10,647

It is clear that these results **are not** definitive. The private sector sample is too small. However, there does appear to be a rather clear pattern from which a number of explanations can be offered.

First, the results of this study seem to indicate that wage rates are not nearly as close for this small sample when using aggregate measures as for the total aggregates measured in the 1996 study. The estimates made for the small sample group can be divided into three general groups following the overall patterns. For the group of private sector workers earning from \$11,000 (or about minimum wage) to those making nearly \$18,000, average wages are about \$15,195 and total average compensation is \$20,875.

Estimates indicate such a group would earn on average about \$18,139 on the SPB wage structure with a total compensation average of \$23,296. In this case, the cost of fringes averages about 27 percent in the private sector but only about 22.2 percent using the estimates (as would be expected since that is near the SPB average cost of fringes). It would seem that this portion of the lower wage group within the private sector is very different from that within the State Personnel Board.

For the upper level group, these findings seem to support those in the 1996 study suggesting that higher income workers tend to be better off in the private sector than under the structure of the SPB. However, fringe benefits seem

Table 15: Comparison of Estimated and Actual Salary and Compensation Using Alternative Regression Equations (continued)

Observation	Sample Actual Annual Salary	Estimated Salary Under SPB	Actual Minus Estimated Salary	Sample Actual Cost of Compensation	Estimated Cost of Compensation under SPB	Actual Minus Estimated Compensation
22	\$ 24,500	\$ 16,238	\$ 8,262	\$ 31,572	\$ 20,925	\$ 10,647
23	24,897	20,359	4,538	29,321	26,193	3,128
24	25,708	15,655	10,053	40,688	20,145	20,543
25	26,867	19,890	6,976	32,664	25,564	7,100
26	27,000	17,864	9,136	35,337	23,084	12,253
27	28,304	14,633	13,671	35,663	18,788	16,875
28	28,304	14,868	13,436	35,663	19,089	16,574
29	30,000	36,218	(6,218)	38,585	45,206	(6,622)
30	30,000	32,219	(2,219)	35,926	40,103	(4,177)
31	31,200	16,824	14,376	40,584	21,735	18,850
32	32,090	43,717	(11,627)	39,180	56,000	(16,820)
33	42,000	17,032	24,968	54,072	21,981	32,091
34	43,750	38,084	5,666	50,417	47,620	2,797
35	44,000	15,266	28,734	54,728	19,604	35,124
36	44,000	41,511	2,489	54,346	53,038	1,309
37	44,192	34,395	9,797	46,180	42,861	3,319
38	45,320	15,387	29,933	61,741	19,757	41,984
39	46,170	38,084	8,086	58,586	47,620	10,966
40	47,000	21,140	25,860	55,156	27,246	27,910
41	56,000	14,256	41,744	74,318	18,284	56,034
42	68,200	39,503	28,697	94,994	49,500	45,494
Mean	\$ 28,183	\$ 22,005	\$ 6,178	\$ 35,770	\$ 28,090	\$ 11,142

comparable for the two groups with the primary difference appearing to be in base wage and salary.

For the middle salary group (between \$18,000 and \$33,000) the workers generally appear better off with private sector wages than under the State Personnel Board; surprisingly, fringe benefits appear to be comparable. It is only in the lowest wage group that there appears to be a substantial difference between the private sector and public sector workers according to the limited data available in this study. This may be a result of limiting the study to larger firms. While it is likely that larger firms are in fact the major competition for workers in higher-wage categories, it may be that in lower-wage categories large firms

give even higher benefits to such workers than the public sector does. The majority of such workers are probably not working for large firms, but rather for small service and retail firms where fringe benefits are lower. However, this may simply be a problem caused by the small sample.

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